

Appl. No. 10/580,894
Amtd. Dated February 23, 2009
Reply to Office Action of January 21, 2009

Amendments to the Claims:

This listing will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently amended): A UV-resistant material which comprises a molecular sieve based host-guest nano-composite which is resistant to ultraviolet radiation, wherein the host-guest nano-composite comprises a host material selected from one or more types of microbore zeolite molecular sieve materials and a guest material selected from one or more of TiO₂, ZnO, CeO₂, and Fe₂O₃ metal oxide nano-clusters .

Claims 2 and 3 (Canceled)

Claim 4 (Previously presented): A method of producing a UV-resistant material that has a molecular sieve based host-guest nano-composite structure which method comprises providing any one or more of TiCl₃, ZnCl₂, Zn(NO₃)₂, CeCl₃, Ce(NO₃)₃, FeCl₃, Fe(NO₃)₃, FeSO₄ as the initiating material and synthesizing the formation of host-guest nano-composite materials by means of ion exchange, whereby at least one of TiO₂, ZnO, CeO₂, and Fe₂O₃ metal oxide nano-clusters couple to the molecular sieve compound and produce a UV-resistant material.

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Claim 5 (Previously presented): The method of claim 4, wherein the ion exchange process comprises following steps:

- a) dissolving the initiating material in water,
- b) adding a molecular sieve material into the solution of step a),
- c) resting or stirring the mixture from step b) for 1~6 hours,
- d) filtering a product from the rested mixture,
- e) washing, drying, and torrefying the product from step d) for 4-24 hours at 400-

600°C.

Claim 6 (Previously presented): The method of claim 4, wherein the ion exchange process comprises following steps:

- a) dissolving the initiating material in water,
- b) adding low-silicon molecular sieve material into the solution from step a),
- c) resting the mixture from step b) for 1 hour,
- d) filtering a product from the rested mixture,
- e) subjecting the product from step d) to washing, drying at 80°C, and torrefying for

12 hours at 500°C.

Claim 7 (Previously presented): The method of UV-resistant material of claim 1, the initiating material comprises butyl titanate and a host-guest nano-composite material having a TiO₂ cluster

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within molecular sieve material is produced by a hydrolytic reaction.

Claim 8 (Previously presented): The method of claim 7, wherein the hydrolytic reaction comprises following steps:

- a) mixing butyl titanate with a high-silicon molecular sieve material in a non-polar solvent under inert gas shielding,
- b) refluxing and agitating the mixture from step a) for 4-48 hours at 50 -100°C,
- c) washing a product from step b) with an alcohol based solvent,
- d) drying the product from step c) at 60-100°C, and
- e) torrefying the dried product for 4-24 hours at 400-600°C.

Claim 9 (Previously presented): A cosmetic formulation that comprises the UV-resistant material of claim 1.

Claim 10 (Previously presented) A coating composition that comprises the UV-resistant material of claim 1.

Claim 11 (Previously presented): A rubber composition that comprises the UV-resistant material of claim 1.

Claim 12 (Previously presented): A plastic composition that comprises the UV-resistant material

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of claim 1.

Claim 13 (Previously presented): The UV-resistant material of claim 2, wherein sieve material comprises at least one type of sieve material selected from X, Y, A, STI, and ZSM-5 type sieve materials.